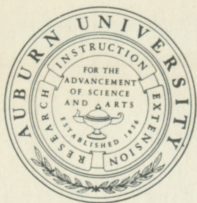


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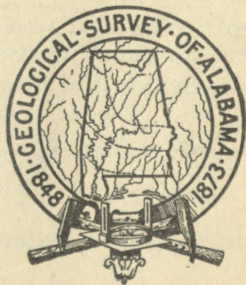
GEOLOGICAL SURVEY OF ALABAMA

EUGENE ALLEN SMITH, STATE GEOLOGIST

BULLETIN NO. 30

SUPPLEMENTAL LIST OF ECONOMIC MINERALS AND ROCKS OF ALABAMA

By
DR. WALTER B. JONES,
CHIEF ASSISTANT



UNIVERSITY, ALABAMA
MAY 1, 1925

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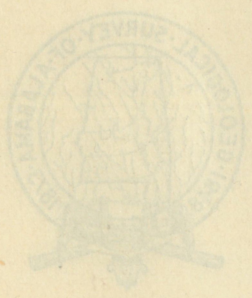
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Geological Survey of Alabama
BUREAU OF GEOLOGY

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No. 1. ARSENIC ORE

Selected sample from near Cragford, in adjacent parts of Randolph and Clay counties, Alabama.

Occurrence.—Lenticular veins to irregular masses of quartzite and pegmatite which strike about N. 35 degrees E. and dip 35 degrees SE. Veins cut slate or phyllite and were formerly worked for gold down to the water level, where the oxidized free-milling ores passed into sulphides.

Minerals.—Arsenopyrite, with minor quantities of pyrite, chalcopyrite and galena. These minerals occur as veins or disseminations in the quartz.

Development.—Still in the experimental stage, but the ready demand for the ore and its apparent abundance, point to immediate exploration.

Geologic Horizon.—Crystalline Area.

Analysis.—Hand-picked sample.

Arsenic	13.0%
Lead	26.7%

No. 2. ASBESTOS

Sample from Ham's cut, Central of Georgia Railway, Tallapoosa County, Alabama.

Occurrence.—Associated with dikes of basic igneous rocks. Most of the specimens have been taken from weathered outcrops. Deposits largely confined to Tallapoosa and Coosa counties.

Minerals.—Associated with corundum and talc.

Development.—None.

Geologic Horizon.—Crystalline Area.

No. 3 ASBESTOS

Sample from Chambers County, Alabama. (Other details same as above.)

No. 4. ASPHALTIC LIMESTONE

Representative sample from near Margerum, Colbert County, Alabama.

Occurrence.—Oolitic limestone member, at base of the Monte Sano limestone, impregnated with asphalt. Widely distributed over Colbert, Lawrence and Morgan counties. Bed is some 20 feet thick, more or less of which is bituminous.

317-806

Minerals.—Oolitic limestone, fossiliferous and asphaltic.

Development.—Known and prospected for many years, with spasmodic operation for derived asphalt. Asphaltic rock development began in 1923 with a production of 1200 tons (*) valued at \$4200. Should prove to be one of the coming industries of Alabama.

Geologic Horizon.—Base of Monte Sano limestone, Sub-Carboniferous group.

NO 5A. ASPHALTIC SANDSTONE

Representative sample from near Margerum, Colbert County, Alabama.

Occurrence.—In sandstone member just below the oolitic limestone. Bed usually does not exceed 12 feet in thickness, with lenticular or zonal impregnation. Also have some asphaltic members in the Hartselle Sandstone, widely distributed throughout the Moulton Valley.

Development.—See under "A."

Geologic Horizon.—Immediately below limestone member, Monte Sano Limestone. Also in Hartselle Limestone, Sub-Carboniferous group.

NO. 5B. ASPHALTIC SANDSTONE

Selected sample from Wolff Creek, Colbert County, Alabama. (Other details same as No. 5a.)

Analysis.—*Asphaltic Sandstone.*

No. 5a.—No Carbonate present

Asphalt (by ignition) 7.51%

No. 5b.—No carbonate present

Asphalt (by ignition) 9.1%

NO. 6. BARITE CRYSTALS

Sample from River Bend, Bibb County, Alabama.

Occurrence.—Usually in boulders, irregular masses and lumps in residual clays derived from the Trenton Limestones. Most important localities are Angel in Calhoun County, Harpersville in Shelby County, several places in Bibb County, near New Market in Madison County, and near Leeds in Jefferson County.

Development.—Some production has been made from a locality a few miles SW of Leeds, in Jefferson County, and from Calhoun and Shelby counties.

*Includes both sandstone and limestone.

Geologic Horizon.—Near the contact of the Trenton Limestone (Ordovician) with the Knox Dolomite (Cambro-Ordovician).

NO. 7. BARITE

Heavy spar. Representative specimen from Angel, Calhoun County, Alabama.

(Other details same as above).

NO. 8. BAUXITE. (PURE)

Average large pisolitic sample of pure bauxite from Rock Run, Cherokee County, Alabama.

Occurrence.—In lenses and pockets widely distributed throughout the State along unconformable contacts between Cretaceous and Paleozoics, between the Midway and Wilcox groups, scattered deposits in the other older Tertiary formations and in the lower Paleozoics. The principal deposits are at Rock Run, in Cherokee County near the Georgia line, and near Margerum, in Colbert County, near the Mississippi line. Subsequent investigation will no doubt determine many other localities.

Development.—Rock Run has had some production for many years, and the Margerum deposits have been thoroughly prospected, ready for development at any time.

Geologic Horizon.—Pockets in the Cambro-Ordovician beds along a narrow belt, extending from the Georgia line southwestward to Anniston.

Analysis.—Average of 6 samples.

Silica	7.24
Alumina	63.50
Ferric oxide	.46
Magnesia	Trace
Lime	Trace
Ignition	30.13

NO. 9. BAUXITE (PURE)

Average small pisolitic sample from Rock Run, Cherokee County, Alabama.

(Other details same as above.)

NO. 10. BAUXITE (SLIGHTLY FERRUGINOUS)

Hard, medium grade sample from Rock Run, Cherokee County, Alabama.

(Other details same as No. 8.)

No. 11. BAUXITE (HIGHLY FERRUGINOUS)

Average sample from deposits near Margerum, Colbert County, Alabama.

Occurrences.—(See No. 8.)

Development.—Thoroughly prospected and leased, development to take place as soon as possible.

Geologic Horizon.—Cretaceous—Mississippian contact.

Analysis.

Silica	14.40
Alumina	50.63
Ferric oxide	7.92
Ignition	25.70
TiO ₂ and CaO not determined.	

No. 12. BAUXITE (CONCRETIONS)

Picked from weathered bauxite clays, from Rock Run, Cherokee County, Alabama.

No. 13. CLAY (CHINA)

Average sample from Chalk Bluff, Marion County, Alabama.

Occurrence.—Associated with the Paleozoics in Calhoun, Talladega, Cherokee, DeKalb, Etowah and perhaps other counties, and with the Tuscaloosa (Cretaceous) formation in Marion, Colbert, Fayette, Tuscaloosa and Bibb counties.

Development.—Although there have been numerous analyses of clays from the various parts of the State, there has never been any great production. Usually 40,000 to 60,000 tons of miscellaneous clays are produced annually, but the high grade china clays comprise only a small portion of this tonnage.

Geologic Horizon.—Miscellaneous clays occur in every part of the State, in almost all of the formations.

Analysis of Fire Clay.

Silica	47.20
Alumina	37.76
Ferric oxide	Trace
Lime	Trace
Magnesia	Trace
Water	14.24

99.20

Average of 8 Analyses of China Clay.

Silica	57.12
Alumina	30.37
Ferric oxide	.41
Lime	.59
Magnesia	.16
Alkalies	.60
Ignition	10.58

99.83

No. 14. CORUNDUM

Sample from near Dadeville, Tallapoosa County, Alabama.

Occurrence.—In veins and dikes cutting crystalline schists, largely confined to Tallapoosa and Coosa counties.

Development.—Some small production has been reported from time to time, but the industry has never been a very important one.

Geologic Horizon.—Crystalline area.

No. 15. FULLER'S EARTH

From McCormick property, located at Pratt's Station, on the E. & O. Branch of the Central of Georgia Railway, Barbour County, Alabama.

Development.—Experimental stages.

Analytical Tests.—The Battle Laboratories, of Montgomery, Alabama, give the following results:

For vegetable oil refining, by method of the Interstate Cottonseed Oil Crushers' Association.

Refined cotton seed oil used. Color 3-5-Y. 8.0 Red. Flavor, hardly prime.

With standard fuller's earth this oil was bleached to:

Color 20-Y—3.2 Red. Flavor, prime.

With McCormick sample, same oil was bleached to:

Color 20-Y—3.0 Red. Flavor, prime.

No. 16. GANISTER (SILICA)

Average sample from the Harbison-Walker quarry at Rock Run, Cherokee County, Alabama.

Occurrence.—Abundant in the Weisner quartzite formation, throughout its extent.

Development.—The Harbison-Walker quarry is the first determined effort at development. Its purity should lead to a considerable exploitation some day.

Geologic Horizon.—Weisner Quartzite of the Cambrian, occurring near the crystalline area.

Analysis.

Silica 100%

NOS. 17 AND 18. GRAPHITE

Average samples, carrying 3 to 5% graphite, from near Hollins, along the Clay-Coosa County line, Alabama.

Occurrence.—Belt extending through Clay, Coosa and Chilton counties, with localized productive areas. Only the weathered rock (as shown) is quarried, because separation of graphite from country rock in the unweathered state is quite impractical. Occurs as lenses in highly metamorphosed mica schists. Associated with quartz, sillimanite, feldspar and micas.

Development.—Received considerable impetus during and immediately following the World War, but is at present paralyzed. The Madagascar deposits can be exploited so cheaply that the graphite situation in Alabama is far from promising.

Geologic Horizon.—Ashland series of the Crystalline Area.

No. 19. NUMBER 1 FLAKE GRAPHITE

From Clay County, Alabama.

Analysis.

Volatile matter	2.00
Carbon (Graphite)	84.00
Ash	14.00
	100.00
Iron	.97
Sulphur	.08

Ash Analysis.

Fe ₂ O ₃	8.32
Al ₂ O ₃	22.94
SiO ₂	64.27
CaO	Trace
MgO	1.43
S	.32
Alkalies	2.78
Total	100.06

NOS. 20 AND 21. GOLD

Selected specimens showing abundant free gold from near Waldo, Talladega County, Alabama.

Occurrence.—Gold quartz veins in schists and slates, more or less lenticular in shape, irregular size and extremely variable

in regard to the gold content. The gold belts are mainly in Cleburne, Clay, Talladega, Coosa, Chilton, Elmore, Tallapoosa and Randolph counties.

Development.—Exploitation began many years ago, from both placers and free-milling ores. The production has been steadily declining until it is practically nothing at the present time. Lack of sufficient quantity of ore of even tenor greatly hampers the gold industry of Alabama.

Geologic Horizon.—Quartz veins in the Talladega slate of the crystalline area.

NO. 22. HEMATITE (GRAY)

Average specimen from Weoka, Talladega County, Alabama.

Occurrence.—Interbedded, one to four seams varying from 2 to 8 feet in thickness, in the upper part of the Weisner quartzite. The ore varies considerably in proportion of silica to iron oxide. Largely confined to Talladega County.

Development.—Some ore mined and shipped to the Ironaton furnaces, but no development on a large scale has yet been attempted. The ore as shipped carries about 45% iron and about 25% of silica.

Geologic Horizon.—Upper portion of the Weisner Quartzite (Lower Cambrian).

Analysis.—Samples from Heacock Mountain, Talladega County.

	Top bed	Middle bed
Metallic iron	56.31	54.95
Silica	15.29	16.26
Alumina	3.26	2.90
Lime	1.26	.98
Magnesia	None	None
Titanium oxide	1.18	.40
Arsenic	.31	.17
Potash	Trace	Trace
Phosphorous	.12	.013

Remarks.—Dr. Crane, of the Bureau of Mines Station at the University, announced that the gray ore is capable of concentration at such cost as to bring them well within the limits of commercial ores. (*Age-Herald* of April 17, 1925.)

NO. 23. GYPSUM

Selenite crystal from Citronelle, Mobile County, Alabama.

Remarks.—Rare in Alabama.

No. 24. KAOLIN

True kaolin sample from Clay County, Alabama.

Occurrence.—Weathered product of feldspar, and is widespread throughout the crystalline area. Its transported product, china clay, is widely distributed all over the State. Kaolins are usually associated with coarse-grained granites or pegmatites, the kaolin being derived from the feldspar in the pegmatites.

Development.—The exploitation of the kaolin deposits of the State is yet in the prospecting stage, all development being decidedly local.

Geologic Horizon.—Veins in the crystalline area.

Analysis.—Average of four samples.

Silica	45.56
Alumina	38.55
Ferric oxide	.07
Lime	.13
Magnesia	.18
Alkalies	.16
Ignition	15.51

100.11

No. 25. KYANITE

Specimen from Randolph County, Alabama.

Remarks.—Of no special economic importance.

No. 26. LIGNITE

Average sample from Coal Bluff, Wilcox County, Alabama.

Occurrence.—Widespread throughout the Coastal Plain area of the State, interstratified in the younger formations. Several of the beds are upward of 7 feet in thickness.

Development.—The abundance of high-quality bituminous coal in the coal measures adjoining the Coastal Plain deposits, has prohibited any extensive development of the lignites.

Geologic Horizon.—Wilcox (Eocene) group. Nanafalia and Bashi.

Remarks.—The lignites may be utilized by converting them partly into gas which may be burned under a boiler to raise steam, or they may desiccated and pulverized and in this condition blown under the boiler.

NO. 27. BLACK MARBLE

Selected sample from three miles NE of Pell City, Calhoun County, Alabama.

Occurrence.—Belt extending through Calhoun, Etowah and St. Clair counties, good quality material being very much restricted in its distribution within this zone.

Development.—Still in the experimental stage.

Geologic Horizon.—Apparently in the Knox Dolomite member of Cambro-Ordovician age.

SPECIAL DISPLAY. BUILDING AND STATUARY MARBLE

Sample from Gantt's quarry, near Sylacauga, Talladega County, Alabama.

Occurrence.—Belt one-half to one and one-half miles wide and about thirty-five miles long, bordering the metamorphic or crystalline area, extending from Marble Valley in Coosa County, through Talladega County and into Calhoun County. Color ranges from pure white to cream, and a dozen grades of the streaked and clouded varieties. Individual crystals are very small, and the stone takes a brilliant polish.

Development.—These beds have been known and quarried for many decades. Principal quarries are Gantt's, Herd's and Moretti-Harrah's, near Sylacauga; Nix's near Sycamore, Bowie's near Rendalia, and Taylor's and McKenzie's near Taylor's Mill.

Geologic Horizon.—Cambro-Ordovician, the exact horizon not being definitely known on account of the metamorphosed condition of all the inclosing rocks.

Analysis.—Average of two samples from Gantt's Quarry.

Silica	.29
Iron and Aluminum oxides.....	.10
Magnesia	.19
Lime	55.71
Carbon dioxide	43.91
	100.20

NOS. 28 AND 29. CAVE MARBLE OR ONYX

Samples from Kymulga, from cave near Childersburg, Talladega County, Alabama.

Occurrence.—Stalactites and stalagmites formed by evaporation of lime-bearing solutions in caves. Very characteristic of most limestone formations throughout the State. Main occurrence is a huge cave about five miles a little N of E of Childersburg. Material is too little in demand to warrant any extensive exploitation. A small amount of stone has been cut and shipped. Engineers have reported from 100,000 to 200,000 cu. ft. of stone in sight.

Geologic Horizon.—Knox Dolomite, of Cambro-Ordovician Age.

No. 30. MICA (ISINGLASS)

Part of a 200-pound crystal from Clay County, Alabama.

Occurrence.—Found in zones of pegmatites in the mica schists in the crystalline area. Pegmatites carry feldspar, quartz and mica, segregated in large crystals. All the production has come from weathered rock, from which the loose mica is readily removed.

Development.—Many mines have been opened and many tons of mica produced, especially from Clay County. At best, however, the industry has led a sporadic existence. Probably will be on a better footing in the future.

Geologic Horizon.—Ashland Series of the Crystalline Area.

No. 31. OCHRE

"A" grade crude from the Bullock Ochre and Clay Products Co. pits at Jackson, Clarke County, Alabama.

Occurrence.—Both red and yellow ochres are fairly abundant throughout the whole extent of the sedimentary formations of the State. In general, the red ochres are residual from the Clinton (Silurian) iron ores, or other strongly ferruginous beds. The yellow variety is more commonly found interstratified with other clays in the Cretaceous-Tertiary groups.

Development.—Years ago considerable red ochre was shipped from Attalla, while yellow ochre was formerly mined and marketed from Autauga and Elmore counties. The company supplying the sample has been producing for about two years.

Geologic Horizon.—Clays in the Vicksburg group.

No. 32

"A" Grade, manufactured product, air-separated from above crude.

No. 33. OOLITIC LIMESTONE

Four-inch cube from the Aday Quarry, near Waco, Franklin County, Alabama.

Occurrence.—Two layers, Burgess and Rockwood, each from 15 to 55 feet thick, about 200 feet and 300 feet, respectively, below the top of the Bangor Limestone. Maximum thickness near Rockwood, thinning out at both ends. Outcrops along the Moulton Valley (east and west), and runs underneath the Cretaceous overlap southward and westward. Decidedly siliceous to the east of Moulton.

Development.—Extensive quarries, mostly on the Rockwood member, located in both directions from Russellville, from which finished stone is shipped annually. Most of the blocks are finished in the district. Large quantities of excellent stone are yet untouched.

Geologic Horizon.—Bangor Limestone, uppermost Sub-Carboniferous.

Analysis.

Silica	.43
Iron and Aluminum oxides	.43
Calcium carbonate	98.44
Magnesium carbonate	.85

 100.15

No. 34

Finished sample from the Reed Quarry, near the Government Quarry at Waco, Franklin County, Alabama.

(Other details same as above.)

SPECIAL DISPLAY

Bird bath furnished by the Foster & Creighton Company, of Russellville, Franklin County.

No. 35. SELMA CHALK, OR ROTTEN LIMESTONE

Representative sample from Demopolis, Marengo County, Alabama.

Occurrence.—Belt about twenty-five miles wide and 1000 feet thick, running approximately east and west across the State. The middle 350 feet will average 75 to 80% calcium carbonate, while some samples will run as high as 90%.

Development.—Quarried extensively near Demopolis, where it is used for the manufacture of Portland Cement.

Geologic Horizon.—Selma Chalk division of the Upper Cretaceous.

<i>Analysis of sample displayed.</i>	<i>Sample Used at Selma for cement manufacturing</i>	
Silica	9.88	12.50
Iron and Aluminum oxides	6.20	2.76
Calcium carbonate	77.12	80.71
Magnesium carbonate	1.08	1.05
Water and organic matter	5.72	1.36
Sulphuric anhydride		1.62
	100.00	100.00

NOS. 36, 37 AND 38. ST. STEPHEN'S LIMESTONE

Polished specimens of the orbitoidal member of the St. Stephens group, from Gainestown, Clarke County, Alabama.

Occurrence.—Belt about fifteen miles wide and some 1000 feet thick running roughly east and west across the State. Varies from soft chalky material to extremely hard limestone (like samples displayed), all abundantly fossiliferous.

Development.—Largely for chimney rock and pillars for houses. This rock is cut with cross-cut saws, and allowed to harden under exposure to the air, before using. Possible cement material.

Geologic Horizon.—St. Stephens Limestone of Upper Eocene Age.

Analysis.

Insoluble matters	3.38
Iron and Aluminum oxides	1.51
Calcium carbonate	92.82
Magnesium carbonate	1.67
Sulphuric anhydride	.08
	99.46

NOS. 39 AND 40. TRIPOLI OR FULLER'S EARTH

Representative sample from Alameda, Clarke County, Alabama.

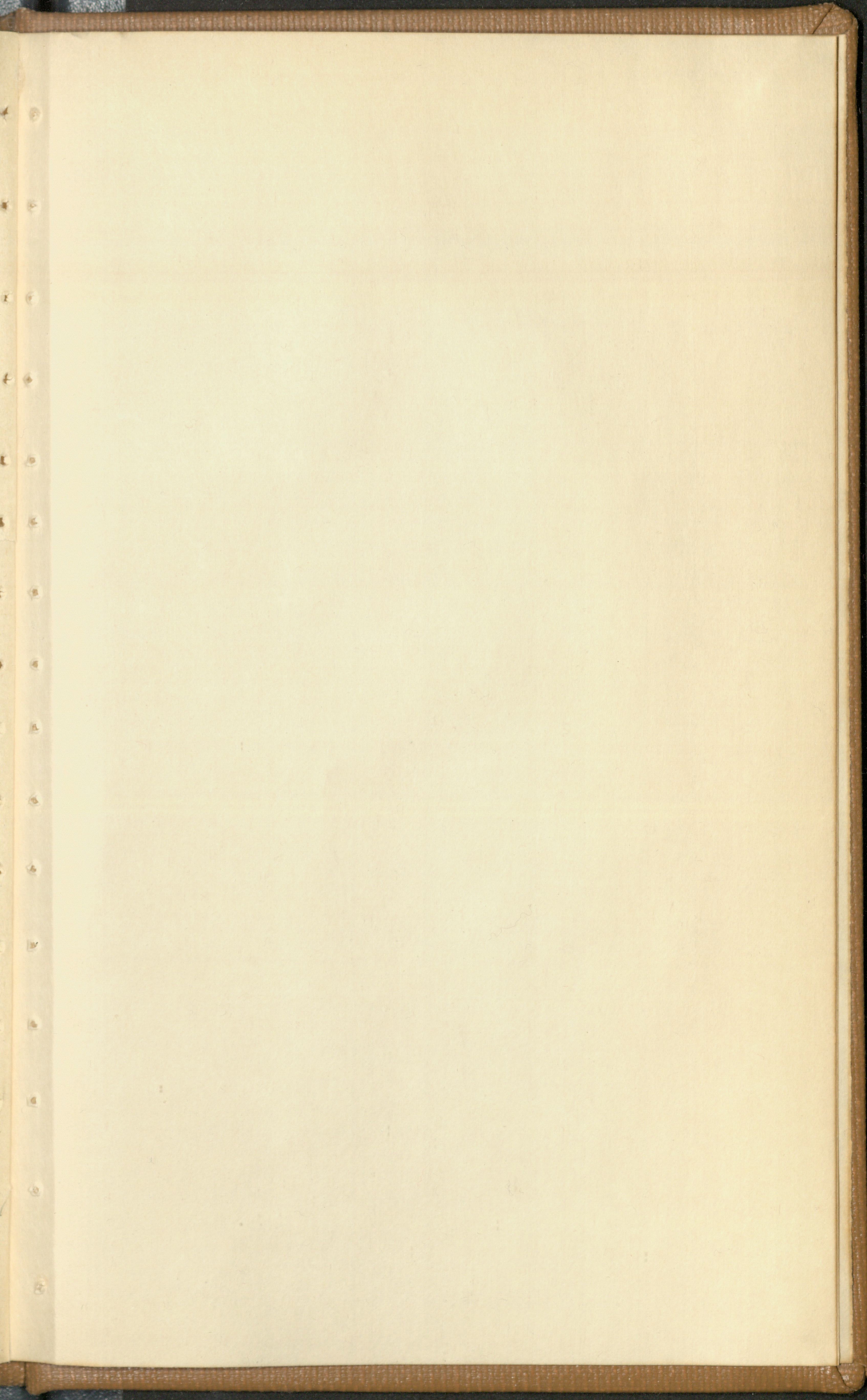
Occurrence.—Typical infusorial or diatomaceous earth occurs in the swamp deposits in the extreme southern portion of the State. Usually is found as residual products from siliceous limestones. Latter group is widely distributed over the State.

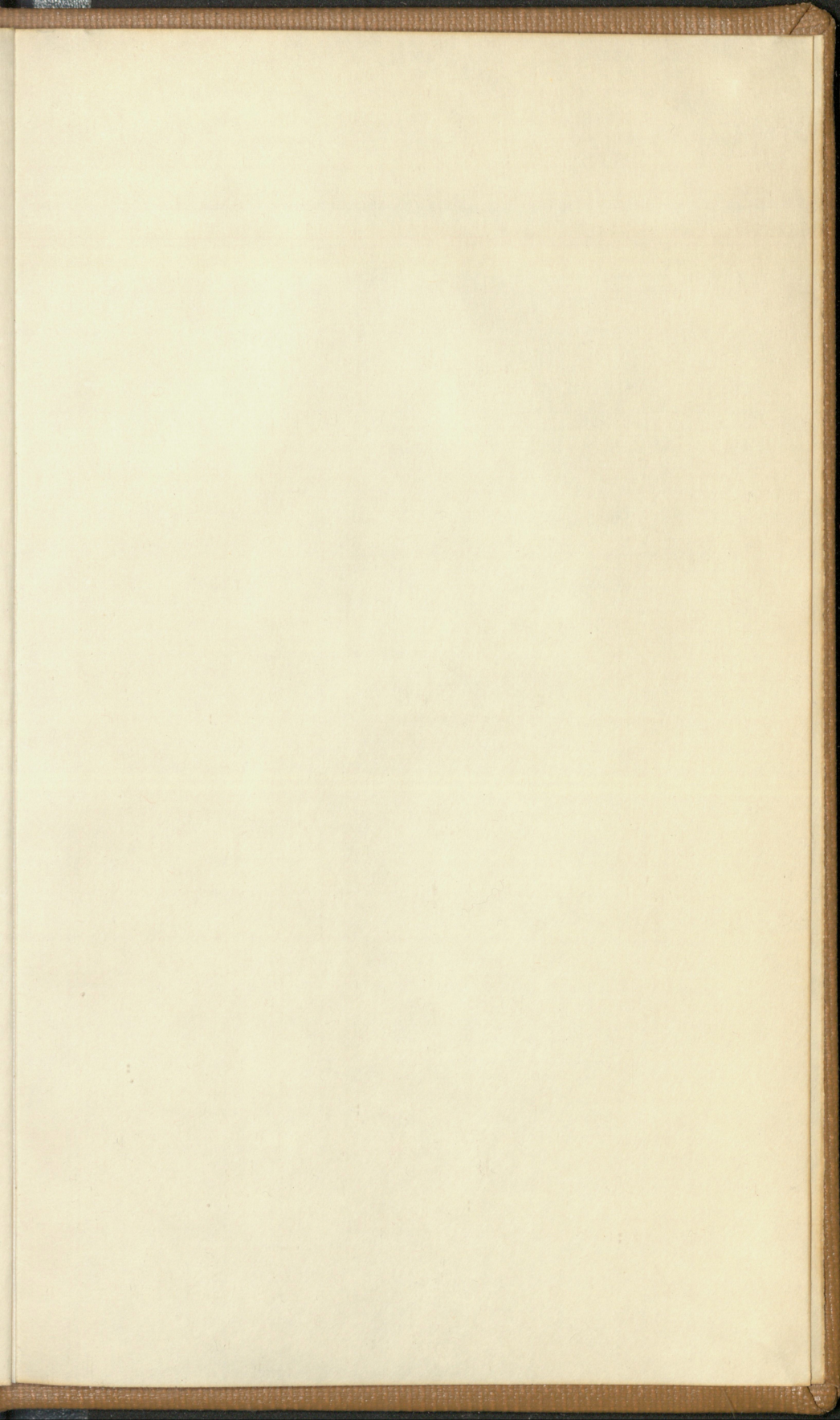
Development.—Some shipment has been made but extensive development awaits future prospecting and more favorable markets.

Geologic Horizon.—Sedimentary in younger Tertiaries, and residual elsewhere in the sedimentary series.

Analysis.

Silica	85.70
Alumina	6.15
Ferric oxide	1.80
Lime	Trace
Water	7.00
	100.65
Total fluxes	1.80
Specific gravity	1.70







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